

SECTION II.L

POST-CLOSURE PLAN

Required Under 40 CFR Part 270.14 (b)(13),

Part 264 Subpart G & Michigan Act 451, Part 111 R.299.9613

Post – Closure Plan

This plan outlines the concepts of post-closure care that will be followed when the Salzburg Landfill is closed under the Closure Plan in the previous section. Prior to closure, Dow will prepare a more detailed post-closure plan, including a post-closure groundwater monitoring program. The post-closure plan will be submitted to the Michigan Department of Environmental Quality, Waste and Hazardous Materials Division (MDEQ-WHMD) for review and approval prior to implementation.

Any deterioration or malfunction of equipment or structures revealed by an inspection will be corrected on a schedule to ensure that the condition does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, or closure plan design specifications are impacted, notification will be provided to the MDEQ, and corrective action taken accordingly.

Post-closure care will be continued for thirty (30) years or the time duration necessary to protect human health and the environment. Post-closure use of the property will be restricted such that the integrity of the final cover, liners, and all other components of the Landfill, as well as functioning of the monitoring systems will be maintained.

The entire Landfill site will remain fenced, and access gates will be kept closed. Warning signs will be posted with the legend “Danger-Unauthorized Personnel Keep Out”.

The following sections outline the activities associated with the Post-Closure Plan.

Description of Planned Inspection Activities

Landfill elements that will be inspected are included in the text below. Most features of Salzburg Landfill will be inspected on a quarterly basis throughout post-closure; some landfill elements not inspected on a quarterly basis are noted below with their alternate schedule. The Post-Closure Inspection Log is located in Section II.E, Inspection Schedule. Any maintenance or repairs noted in the inspection logs will be brought to the attention of the Landfill Technical Advisor in order to address them. The actions completed will then be documented in the inspection log. Maintenance activities recorded on the Landfill inspection logs will be described in the Annual Report.

Site security - Warning signs, gates, and the fence will be checked weekly by Dow Security staff. The electrical equipment at the sites, such as pumps and valves, will continue to be monitored via computer to detect any malfunction or tampering.

Cap Inspections

- Erosion – The landfill cap slopes will be checked quarterly for erosion during spring and fall periods when the ground is not frozen.
- Vegetative Cover – The vegetative cover will be checked quarterly for adequacy. The vegetative cover will be cut when deemed necessary. The rule of thumb will

be that mowing will be performed when the vegetative cover reaches approximately twelve (12) inches in height. The workers performing the mowing will make a visual inspection of the caps for erosion, settlement and washouts and will report any findings to Dow personnel. Dow will address such problems appropriately.

- Burrowing Animals – The site will be inspected for burrowing animals; none should be present.
- Settlement – The top of the closed cells will be inspected quarterly for ponding. In addition, at least one inspection per year will be made during or following a rain event to observe ponding in any depressions that may have formed due to settling. The closed cells will be surveyed on a routine schedule according to the Cap Elevation Survey Plan, Appendix 1 to this Section. This survey program will be utilized to evaluate long-term cap stability and/or subsidence.
- Gas Venting Systems – The installed gas venting system will be inspected annually.

Run-on and run-off – The surface water ditches external to the Landfill cells will be checked quarterly to ensure adequate drainage.

Liner Failure Detection System – Lift stations, pumps, visible piping, and instrumentation will be checked for proper operation monthly. .

Leachate Collection System – Leachate lift stations will be checked monthly to ensure pumps, instrumentation, and visible collection pipes are operating properly. If leachate generation rates decline to 10% of active operation flow rates, the inspection frequency will be reduced to twice per year.

Groundwater Monitoring Wells – The condition of the well casings, caps, and pumps will be checked semi-annually as the wells are sampled.

Benchmarks – Inspection of the site benchmark will be performed every three years by cross checking the landfill benchmark elevation to the elevation readings of the nearest in-plant Dow benchmark. The most recent survey of the benchmark elevations were performed during the Fourth Quarter 2005.

Maintenance Activities

Security – Signs will be replaced as needed. Soil at the base of the fence will be re-graded as needed to maintain security. The fence will also be maintained as necessary to provide adequate site security.

Cap Inspections

- Erosion – Washouts will be repaired whenever they are detected. When integrity of the cap is threatened, corrective measures will begin as soon as possible.

Restoration of vegetative cover will be performed during or at the end of the growing season.

- Vegetative Cover – Maintenance of vegetative cover will include reseeded, watering, and fertilizing as needed. Trees or brush growth will be prevented over the constructed cell cap.
- Burrowing Animals – Eliminate burrowing animals and maintain/repair burrows, as necessary.
- Settlement – Settlement becomes an issue when drainage is no longer sufficient to reduce ponding, etc. and may need to be repaired. Major repairs may need prior approval before repairs are implemented.
- Gas Venting Systems – Gas vents will be reset in the cap if they are dislodged. Damaged vents will be repaired or replaced.

Run-on and Run-off – Draining sumps and ditches will be cleaned and maintained to allow free drainage so that the retention of stormwater on site does not occur.

Leachate Collection System and Liner Failure Detection System – The primary anticipated maintenance concern will be pump operation and instrumentation. Should any damage or failure occur to pumps or related instrumentation, repair or replacement of the defective equipment will be performed.

Groundwater Monitoring Wells – Where dedicated sample pumps are present, the primary anticipated maintenance concern will be pump operation. Should damage occur to the sample pumps, they would be repaired or replaced. Should the casing to a well be moved or damaged, or otherwise yield non-representative samples, it will be repaired or replaced if necessary.

Benchmarks – Should the benchmark be moved during excavation or otherwise damaged, it will be reset in the ground and the elevation will be re-established by resurveying.

Deed Restriction and Cap Integrity

A notation in the deed has been completed informing potential purchasers that the land has been used to manage hazardous wastes and its use is restricted under 40 CFR Part 264 Subpart G.

In accordance with 40 CFR 264.117 (c), post-closure use may never be allowed to disturb the integrity of the final covers, liners, or any other components of the containment system, or the functions of the facility's monitoring system unless the MDEQ Director finds that either the disturbance is necessary to reduce a threat to human health or the environment, or it is necessary for the proposed use of the property and will not increase the potential hazard to human health or the environment.

Monitoring Activities

The closed Landfill will be monitored by collecting and analyzing samples for a target list of organics that would be representative of the contaminants remaining in the system at closure. The list of parameters was developed by reviewing historical leachate data and recent Appendix IX monitoring data. The leachate collection system and the liner failure detection system will be sampled semi-annually after Landfill closure, unless another sampling program is approved by the Director.

Analysis of the leachate collected from the system will provide data regarding leachate composition. Analysis of the liquid from the leak detection sump will provide confirmation that the primary liner is intact.

Contact Information

As required by 40 CFR 264.118(b)(3) the Responsible Care Leader of the Michigan Operations site is the contact for questions about the unit during the post-closure care period.

Responsible Care Leader
Michigan Operations
1790 Building
Midland, MI 48667
989-636-2646

Plan Amendments

Any amendments made to the post-closure plan will comply with the requirements of 40 CFR 118(d).

Cap Elevation Survey Plan
for
Salzburg Landfill

Introduction

Dow undertook an investigation in August 2008 to determine if settlement was occurring on previously capped cells at Salzburg Landfill (SLF). The investigation was performed to establish a basis for specifying a time frame for future surveys of capped cells at SLF to ensure settlement was not becoming an issue.

The investigation involved surveying capped Cells 17 through 19 (Cells 17/19) and capped Cells 40 through 43 (Cells 40/43). Both of these cells were capped in 2005. The survey involved determining the current top of cap elevation at approximately 20 points, oriented in 3 cross sections. The survey results were compared to the original construction plan elevations to determine if settlement was occurring.

The data from the August 2008 survey and the original plan elevation comparison are shown on attached drawings B2-100-854 (Cells 17/19) and B2-100-853 (Cells 40/43). The average change in elevation for all of points surveyed on each cap is less than 0.1' from the plan elevations. The largest elevation deviation is in a line along the topsoil berm on the east side of Cells 17/19 (see Points 7, 14 & 21 on B2-100-854). The average elevation change for these three points is 0.3 feet. We calculated the current cap slope in this area and found it to be very close to the originally proposed cap slope as shown in the following table:

<u>SURVEY POINT</u>	<u>CURRENT SLOPE BETWEEN POINTS</u>	<u>ORIGINAL SLOPE</u>
7		
	0.9%	1%
14		
	1.2%	1%
21		

These findings indicate that there are no settlement issues on the Cells 17/19 or Cells 40/43 caps. We believe this is true for all capped cells at Salzburg Landfill which is supported by these two facts:

1. Ponding has never occurred on any of the caps which are visually inspected after every ½" rainfall; and
2. No caps have experienced sink holes or differential settlement requiring a repair in the past 23 years.

Based on our findings and as required by Condition III.E.4 of the license, Dow proposes the Cap Elevation Survey Plan described below.

Cap Elevation Survey Plan

- Determine the current elevation and location of approximately twenty-five (25) to thirty-five (35) survey points on each capped cell. The actual number of points will be determined at the time of survey and will be sufficient to allow a complete cap settlement assessment to be made.
- The survey points will be oriented along five (5) to seven (7) specific cross sections on each cap with two (2) to six (6) points per cross section.
- The survey points will be aligned in a grid pattern that will allow the slope of the cap surface to be accurately determined between and/or along each cross section.
- The proposed grid pattern for Cells 17/19 and Cells 40/43 are shown on attached drawings B2-200-854 and B2-200-853, respectively. The grid pattern for all of the other capped cells at SLF will be agreed to by the MDEQ and Dow prior to starting the first survey of the site.
- The periodicity for the post closure surveys on closed cells will be as follows:
 - First survey of all currently capped cells at SLF, Cells 1 thru 19 & Cells 38 thru 43, will be performed in 2010, or the year that currently active Cells 20/22 is capped. This survey will also include the as-built final elevations for Cells 20/22;
 - If the MDEQ and Dow agree the results of the first survey indicate settlement is not an issue, the second survey of all capped cells will be performed 3 years after the first. The majority of cap settlement for Cells 20/22, if any, should occur within this time frame;
 - If the MDEQ and Dow agree the results of the 3 year survey indicate settlement is not an issue, the subsequent survey of all capped cells will be performed 5 years after the second;
 - If the MDEQ and Dow agree the results of the 5 year survey indicate settlement is not an issue, periodic surveys will then be performed every 10 years after that;
 - If, at any time, evidence is found indicating that settlement has become an issue, the periodicity of the surveys may be discussed and agreed upon with the MDEQ.
- Surveys of future cells capped after Cells 20/22:
 - First survey will be the determination of the as-built elevations when the cap is constructed;
 - Second survey will be 3 years after the cap is constructed. The majority of cap settlement, if any, should occur within this time frame; and
 - If the MDEQ and Dow agree the results of the 3 year survey indicate settlement is not an issue, this cap will then be surveyed as part of the next 10 year site survey.
- Indicators that "significant" settlement may have occurred:
 - The elevation of a survey point changes by more than 0.5 feet in elevation between surveys;
 - A 30% flattening of the as-built cap slopes, i.e., a 1% as-built cap slope reduces to a 0.7% slope or a 2% as-built cap slope reduces to a 1.4% slope; or
 - Significant ponding is noted during the post-rain event inspections.